

Dehumidifiers: Get Relief From Moisture And Humidity Problems.



A dehumidifier is commonly used to decrease moisture and humidity in the air. The dehumidifiers accomplish their work with the help of different types of dehumidifiers. These systems can also achieve their goals by using chemicals which can absorb moisture.

How Does a Dehumidifier Work?

A dehumidifier regulates the humidity in a room by removing the excess moisture from the air and creating a living environment that is inhospitable to dust, mould, moisture, etc.

Steps that a dehumidifier takes during operations:

- Firstly, the air is drawn into the unit by a fan from the room
- Then the air is passed over the cold coils
- Air is cooled, and its moisture condenses
- After this step, the water falls into the drip pan
- Then the air is reheated by a heat recovery system
- And simultaneously, the dry air goes into the room
- Lastly, the dehumidifier will automatically get off after the water is drained.

Types of Dehumidifiers

There are two types of dehumidifiers: Refrigerant dehumidifiers and **Desiccant dehumidifiers**.

Refrigerant Dehumidifiers:

The dehumidifier uses much similar process to a fridge at our home. The refrigeration process generally cools a metal plate, on which the moisture from the air liquidizes. In this process, a fan constantly draws the air through the dehumidifier and even over the cool metal plates. This process liquidates the moisture onto the plate and drips it into the dehumidifier's water tank.

Refrigerant dehumidifiers are commonly effective at room temperatures and decline their performance dramatically in cooler conditions. The common reason for the declaration is ice formation on the metal plates. The dehumidifier can work efficiently at lower temperatures but requires higher-performing components to achieve its goals.

Desiccant Dehumidifiers:

The desiccant dehumidifier is entirely different from the refrigerant dehumidifier. The dehumidifier absorbs water from the air using desiccants, like **silica gel**. A desiccant is commonly used for absorbing water and is found in small packs in the form of crystals or beads.



How does the desiccant dehumidifier work?

In the dehumidifier, a wheel consisting of desiccants turns slowly through the incoming air and absorbs its moisture. During the process, a proportion of the wheel passes through the warm air stream, which reactivates the desiccant by absorbing all the moisture. Then the water is collected in the dehumidifier collection tank. This system tends to be relatively smaller and lighter than refrigerant dehumidifiers. The purpose is to choose dehumidifiers that operate at much lower temperatures, particularly in cool areas like garages, workshops, etc.

The desiccant dehumidifiers generally use silica gel to absorb moisture and humidity. Silica gel makes the dehumidifier more active so that it can absorb more and more moisture and humidity. The silica gel is available in packets, pouches and bulk quantities according to the user's requirements.

Researchers convey that silica gel is a well-known desiccant and even a natural dehumidifier that absorbs moisture by reducing the humidity from the surrounding. Thus, silica gel is an effective desiccant in keeping away mould or mildew from essential products.

Different types of dehumidifiers used in Industrial and Commercial areas:

- Condensate Dehumidifier
- Electric Refrigeration Dehumidifier
- Spray Dehumidifier
- Ionic Membrane Dehumidifier
- Chemical Absorbent Dehumidifier

Condensate Dehumidifiers:

These dehumidifiers use cold devices to collect water from the air. This water is known as condensate, which is usually greywater. The dehumidifier is often used for industrial purposes.

Electric Refrigeration Dehumidifiers:

It's very commonly used and draws moist air from a refrigerated evaporator with the help of a fan. The evaporators have a coiled tube, a fin and a tube. The dehumidifier condenses the water, which is being removed, and then the air is reheated by a condenser coil. The preheated air is then released into the room. The dehumidifiers are best at higher ambient temperatures, with high dew points.

Spray Dehumidifiers:

In spray dehumidifiers, the cold water to a temperature that is below the atmospheric dewpoint. Due to this, the water condenses into it faster than water evaporates. Therefore, the system mixes cold water and air sprays to capture moisture.

Ionic Membrane Dehumidifiers:

These dehumidifiers use an ionic membrane to remove humidity in or out of a sealed enclosure. These systems mostly use a solid polymer electrolyte membrane (SPE). As a disadvantage, these don't have high dehydration capacities. Dehumidifiers are often used to protect sensitive electrical components, medical equipment, etc., from humidity.

Chemical Absorbent Dehumidifiers:

The absorbent dehumidifiers, also known as [desiccant dehumidifiers](#), use hydrophilic materials like silica gel to dry the air. Silica gel is one of the best practical solutions for absorbing moisture. The process of removing the moisture from the air is the same as the desiccant dehumidifiers. These dehumidifiers can be used in both commercial and industrial applications.

Common features of dehumidifiers:

Frost-control sensor: This sensor turns off the dehumidifier if frost begins to form in the coils. This senses the frost and keeps the application free from racking up your energy bills.

- **Clean-filter Alert:** The importance of cleaning and maintaining the dehumidifier is to operate it properly. This filter is responsible for cleaning up the air that flows through the system.
- **Water tank size:** When choosing a dehumidifier, it is very important to look for a water tank with comfortable handles so that you can remove and carry water easily.
- **Timer:** The timer is generally programmed automatically and switches on and off when the work is done.

Silica Gel For Dehumidification Process



Desiccant dehumidifiers are highly-effective in removing moisture or water content from the atmosphere. Silica gel is an efficient dehumidifier. In this article, we will discuss the application of silica gel for the dehumidification process.

Dehumidification

Dehumidification is the process of removing water or moisture from the room with the evaporative cooler. Removal of the moisture is important to keep the products intact and long-lasting. Desiccant **dehumidifiers** are a cost-efficient way of controlling the moisture levels, removing odor and micro-organisms from the air.

Silica gel dehumidifier

Being one of the most effective adsorbents and desiccant, silica gel is used in various industries for different applications. Silica gel dehumidifiers are devised such that, the air to be processed, will pass through a bed of silica gel crystals. The silica gel desiccant dehumidifiers will adsorb the water in this air current. Then the processed, less humid air will be allowed to move out of the installation. **Blue and white crystals of silica gel** are perfect desiccants for protecting the products and systems from corrosion, condensation, mildew and other damaging effects.

Silica gel has a color-changing property. This enables the identification of desiccant upon saturation. For regenerating the silica gel, a hot air current allowed through the gel bed. The hot air will then remove the water from the silica gel, which is at a lower temperature. This air will be directed outside the device or can be directly let to be dehumidified by passing through the regenerated silica gel bed. Both the air currents, the one to be processed at normal temperature, and the one for reactivating the silica gel at elevated temperature, are separated by seals and the entire process is designed in an enclosed device.

Perks of using Silica gel desiccant dehumidifier

- High performance
- DMF free
- Safe and non-toxic
- Indicating properties
- Cost-effective and economical

Silica gel desiccants are available in packets, pouches, or in bulk quantity which gives the best possible outcome based on their exact use. The silica crystal dehumidifiers are applied for individual rooms in your home, gun safes, marine and RV applications; they can absorb environmental moisture until they have the full capacity.